

# Design-Build and the STEEL FABRICATOR

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In January 2000, a group of 23 architects and engineers met in San Francisco to discuss the future of their professions and firms. They took a hard look at both the positive and negative trends impacting design and construction today. Interestingly, the same trend topped both their positive and negative lists: design-build. The steel industry is faced with the same dilemma; is the trend toward design-build project delivery to be embraced with open arms, or is it a pariah to be avoided at all costs?

No matter how the steel professional may wish to answer that question, one thing is clear: design-build is here to stay. Since the mid 1980s design-build has grown from being the project delivery methodology for 5% of this nation's construction project to nearly 35% today. It is anticipated that by 2005, as many projects will be delivered utilizing design-build as will be delivered through the traditional design-bid-build approach. Like it or not, today's steel professional must develop competence in working in the design-build arena or see nearly half of the potential market for their goods and services disappear.

At the simplest level, design-build is the combination of design and construction in one contract. Design-build is a method of project delivery in which the design/builder is responsible for designing and building the project. Unlike the traditional approach of design-bid-build where a sequential process of design, preparation of construction documents, bidding, contract award and construction takes place, design-build focuses on eliminating and overlapping several of these steps. Construction documents can be prepared during the design process, bidding is replaced by the negotiation of

fees at the conceptual level of project design, and construction can begin before the drawings are completed, resulting in a fast track approach that can save the project owner significant time and reduce the overall cost of the project.

The owner gains the advantage of a single point of contact and a concentration of responsibility with the design-build entity; no longer is the owner positioned between the contractor and designer during construction disputes. Any extra costs for design or judgment errors are born by the design-builder. For the owner, design-build presents all the benefits of a single source solution for project delivery. A recent study performed by the Construction Industry Institute indicated a reduction of project cost of 6%, a shortening of the project delivery time by 33% including a 12% reduction in actual construction time and an increase in project quality in every major category when design-build is utilized.

Over the past several years, the structure of the "single design-build entity" has evolved from single source design-build firms to partnerships between architects and general contractors to a teaming arrangement where all key members of the construction process, including specialty contractors, are participants. The formation of teams to deliver design-build projects is a critical juncture for the steel professional. Team members have the opportunity to negotiate their fees, influence project design around the efficiencies of their own processes, contribute their expertise early in the project life cycle when "value engineering" can have the greatest impact and work together with other design and construction professionals to deliver a quality project at a fair cost on an accelerated schedule. Firms not on the project team but involved in the project are seen as

simply being commodity providers on a low bid basis.

The choice for the steel professional and particularly for the steel fabricator is clear: step up and become a participating member of design-build teams or spend life as a low bid commodity supplier to design-build projects. While that may seem like a stark choice, the benefits for the steel fabricator choosing design-build are clear. The 2001 financial survey of steel fabricators conducted by AISC indicated that 74% of responding firms experienced greater profitability in design-

"Assembling a highly effective project team from among many disciplines and vocations with the design and construction industry is at the heart of design-build delivery."

*Beard, Loulakis & Wundram*

Design-Build:  
Planning through Development

"The focus on common goals and the single point of over-all project control are basic ingredients that make up design-build services."

*Beard, Loulakis & Wundram*

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build projects as compared to design-bid-build projects. Only 6% indicated that design-build projects were less profitable. But profitability is not the only reason to pursue design-build. Design-build allows the steel fabricator to profit from his years of experience by contributing that experience to the project. Design drawings can be influenced to contain necessary information, designs can be suggested that are tailored to the efficiencies of the fabricator's shop, structural systems can be defined that are optimal for the project, projects can turn around faster through the fabricating process enhancing productivity, fees can be negotiated rather than bid and the steel fabricator can step up and coordinate all of the steel activity on the project.

Early this year AISC Marketing surveyed nearly 100 steel fabricators regarding their involvement in design-build. From that survey, it became clear that steel fabricators experience involvement in design-build projects at five different levels.

### Provider

The first level, Provider, represents involvement no different than that of bidding work on a traditional design-bid-build project. A design-build team has performed the design work and will coordinate construction, but the steel is still let out to bid. The biggest loser at this level is the project owner who loses the opportunity to benefit from the fabricator's experience and still suffers the delays associated with bidding and the flow of information between the separate entities of the design-builder, structural engineer and steel fabricator. For the fabricator, this level does create contact with design-builders and allows the opportunity to discuss how teaming with the fabricator can bring cost and schedule savings to the project.

### Resource

The second level, Resource, is the first step toward full participation on a design-build team. At this level, the design-builder invites the fabricator to comment on the bid drawings before they are released for bid. The comments may include a review of the completeness of the drawings and suggestions for value engineering the work. The downside for the fabricator

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## DESIGN-BUILD AND THE STRUCTURAL STEEL FABRICATOR

The design-build industry in the United States is growing every day. Currently, design-build (DB) accounts for approximately 33% of the non-residential marketplace. The value of the DB marketplace is between \$70 and 90 billion annually. On the legislative front, 46 states permit DB on public sector projects in some manner or another.

Some owners consider DB to be their preferred delivery method, while others, such as the United States Army Corps of Engineers, are planning to award 50% of their Military Construction program using the DB delivery method during the next 12 months. The Federal Bureau of Prisons and the United States Navy are strong DB advocates and regular owner-practitioners as well.

Why are owners selecting DB as their way of delivering projects? The answer is simple. It's effective and efficient. In a nationwide survey of 351 projects, the Construction Industry Institute found a savings of 33.5% in delivery speed and 6.1% savings in unit cost when owners use design-build instead of design-bid-build. There's also less cost growth and less schedule growth on design-build projects according to the same CII study.

Why do owners and prime design-builders need structural steel fabricators selected early on their DB teams? Because you can:

- Value engineer a project
- Come up with a potentially better design which will deliver their intended facility better, faster, and more economically
- Assist in keeping the project on schedule
- Help the design engineers to keep the project on budget by working side-by-side as partners in executing the job.

Why should fabricators want to get involved in DB? Because fabricators become pro-active in creating solutions for projects instead of issuing Requests for Information (RFIs) and searching for change orders to try to make your fee. Fabricators understand what it takes to use a composite design in certain circumstances and that vibration can be lessened by thinking through the materials and methods before a line is ever drawn on paper in the first place.

Please remember there's no panacea in our business. We all have to work hard for the money we earn. You will have to dedicate some considerable time to DB projects. It will take you and your top team (your A+ team) to execute these projects. All stakeholders need to be involved early, sitting at the table, making decisions, lending support to each other.

It's a new world, one in which the steel fabricator will contribute significantly much earlier in the process than before and become an important part of the solution. You will no longer simply serve as a supplier of materials and services that are prescribed by others without your input. Get involved!

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is that the comments that are made will still “be shopped” to the lowest bidder. No guarantee exists that the fabricator investing time in the process will be the fabricator selected to perform the work. The downside for the owner and the design-builder is that the wise fabricator will only invest a small amount of time in review and comment. The accepted comments will only slow down the design process as plans are being revised, and there will be no savings in time on the project. Rather than focusing on the downside of being shopped, the fabricator should see this level of involvement as a marketing opportunity to demonstrate the type, not the detail, of cost and time savings suggestions that could be made.

### **Ally**

Level 3, Ally, moves the fabricator closer to becoming a member of a design-build team. Early in the process, the design-builder invites the fabricator to meet with the project team and evaluate the project. Often the fabricator will be asked to provide a conceptual estimate of the structural steel on the project that will be used by the design-builder as part of the negotiated fee for the project. The fabricator will work closely with the project team and have the opportunity to influence design choices, suggest cost saving alternatives and tailor the final design to the efficiencies of their particular shop. Yet, when the day is done, the steel on the project will still be a bid item. The fabricator who has worked on the project will often be granted the right of matching the final bid in order to obtain the project. Because the work is still bid, the project schedule is not as accelerated, as drawings must be complete before the work can be bid and awarded. The steel fabricator cannot anticipate the job and order steel during early stages of design, nor can he begin work on shop drawings until the job is actually awarded. The danger for the fabricator is that while other bidders may argue for extras on the project, early involvement in the project and provision of the conceptual estimate may result in extra requests being rejected on the basis of “you should have caught that earlier.”

### **Partner**

At level 4, Partner, the owner and design-builder will begin to benefit directly from the involvement of the steel fabricator as a partner of the design-build team. Selected to be part of the team on the basis of quality, the steel fabricator working in concert with a structural engineer will provide preliminary framing options and a conceptual estimate for all the steel on the project as early as a 10% design level. This conceptual estimate will form the basis of the fabricator’s negotiated fee for the project. From the perspective of other members of the project team, the steel fabricator has sole responsibility for all of the steel and steel related activities on the project. In reality, different project structures may influence whether the structural engineer, fabricator, erector or steel subcontractors is contractually under the fabricator, the structural engineer or contracted directly to the design-builder, but from the perspective of the design-build team, the lead steel professional is the “go-to” for all steel related issues. Change orders are eliminated unless the owner changes the project scope. Communications are facilitated between the fabricator and structural engineer, since both work together for the successful execution of the project. Value engineering input is provided early in the life of the design where significant changes can be implemented at minimal cost. Steel for the structural frame, always on the critical path of the project, can be ordered early in the design cycle, and shop drawings can be produced as the final design proceeds. Electronic data interchange can take place not just between computers but also between team members sharing critical design data in a usable format that accelerates every member’s contribution. Fabrication can overlap design and erection can begin as soon as the foundation is in place. The fabricator takes control of the risks associated with project performance by designing to a price rather than pricing a design.

### **Member**

Level 5, Member, is the pinnacle of design-build project involvement. Being a member of design-build team carries with it all the advantages and responsibilities of the level 4 role of partner, but it includes even earlier in-



“Accelerated delivery, risk reduction and early cost guarantees, savings on total costs, flexibility, single-source responsibility and accountability, simplicity, innovation, integration and imagination all are areas of need in today’s building industry. Specialty contractors are successfully responding to these needs within the framework of design-build.”

*Charles Weaver, Jr.*

Kennedy Associates Inc, St. Louis  
Specialty Design-Build supplement  
to Building Design & Construction



volvement, closer contact with the project owner and control of the structural system selection. The fabricator is a member of the team before the proposal stage of the project. At times, the fabricator will actually bring the project to the design-build team and represent the team to the owner. Being a member of the team allows the fabricator to focus on the relationships between team members and successful project completion rather than just the fabricator’s role on the project. Because the fabricator is intimately involved in the project from even before day one, his participation in the design/build team results in the greatest opportunity for saving time, saving costs, and increasing project quality. While the risk for the fabricator may increase, the potential for reward increases as well with the potential sharing of incentives and project profits among team members.

Today, many steel fabricators have had the positive experience of being a member of a design-build team. A recent survey conducted by AISC Marketing indicated that 23% of fabricators involved in design-build have worked on projects at the member level. (Full results are: Provider – 23%; Resource – 18%; Ally – 11%; Partner – 17%; Member – 23%.) These fabricators are making an impact in the design and



AISC Marketing in conjunction with the Design-Build Institute of America is offering an introductory seminar "Successful Design-Build for Steel Fabricators". This seminar will next be offered on November 28th and 29th in San Diego, California and in the Spring of 2002 in the Washington, DC area. For more information contact John Cross at cross@aiscmail.com or 312-670-5406.



construction industry by serving the needs of owners for fast track, cost effective, quality projects and are experiencing enhanced company profitability and satisfaction.

What does it take to embrace design-build? What are design-builders looking for in steel fabricators? At a recent AISC-DBIA (Design-Build Institute of America) seminar on Successful Design-Build for Steel Fabricators (which should be required for every steel fabricator involved or interested in design-build), Mr. Stan Baucum of The Beck Group outlined ten critical characteristics steel fabricators need to develop to become effective in design-build:

- Willingness to put a great deal of effort into building relationships within the team
- Ability to develop a high level of trust with the design-builder
- Commitment to a culture that encourages change among all team members
- Understanding of the need for all partners to benefit from the relationship
- Understanding by the fabricator of the design-builder's integrated process and willingness to change internal processes to fit the design-builder's process
- Proven structural design capabilities either in-house or through close alliances with structural engineering firms

- Proven detailing capabilities
- Proven fabrication and delivery capabilities
- Proven and established relationships with erector(s)
- Working arrangements with mills for steel availability

Beck is but one design-builder actively looking for steel professionals to join them in the pursuit of the opportunities to dramatically increase the value of the design-construction process for project owners. Design-builders are recognizing the value of early involvement of steel professionals on project teams.

Today's steel fabricator and other steel professionals must decide if the increased rewards, satisfaction and opportunities of design-build outweigh the perceived risks and resistance to change. Just like architects and engineers, steel professionals need to decide if the growing design-build momentum is a positive or negative trend for their own businesses. Either way, it is clear: design-build is here to stay.

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